

Infant Health Statistics, Prosperity Region 4, Michigan

Prepared by Maternal and Child Health (MCH) Epidemiology Section,
Michigan Department of Health and Human Services (MDHHS)
Data source: Michigan resident live birth files (12/12/2018) and infant mortality files (01/23/2019),
Division for Vital Records and Health Statistics, MDHHS
June 2019

8/23/2019

1

This presentation provides updated infant health statistics for prosperity region 4 in the State of Michigan.

This presentation was prepared by the Maternal and Child Health Epidemiology Section, Michigan Department of Health and Human Services (MDHHS).

Data source: Michigan resident live birth files (12/12/2018) and infant mortality files (01/23/2019), Division for Vital Records and Health Statistics, MDHHS

Revised: June 2019

Infant Mortality Rate (IMR), Prosperity Region 4, 2010-2017

8/23/2019

2

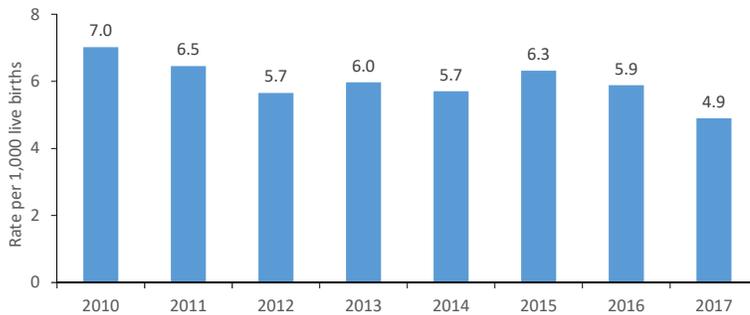
The next several slides contain updated infant mortality rate statistics for prosperity region 4 in the State of Michigan.

Infant Mortality Rate, Prosperity Region 4, 2010-2017

(rate per 1,000 live births)

Infant Mortality Rate per 1,000 Live Births,
Prosperity Region 4, 2010-2017

2017 Michigan Rate = 6.8



Year	# Live Births	# Infant Death	IMR
2010	19,665	138	7.0
2011	19,681	127	6.5
2012	19,811	112	5.7
2013	19,591	117	6.0
2014	19,802	113	5.7
2015	19,625	124	6.3
2016	19,709	116	5.9
2017	19,387	95	4.9

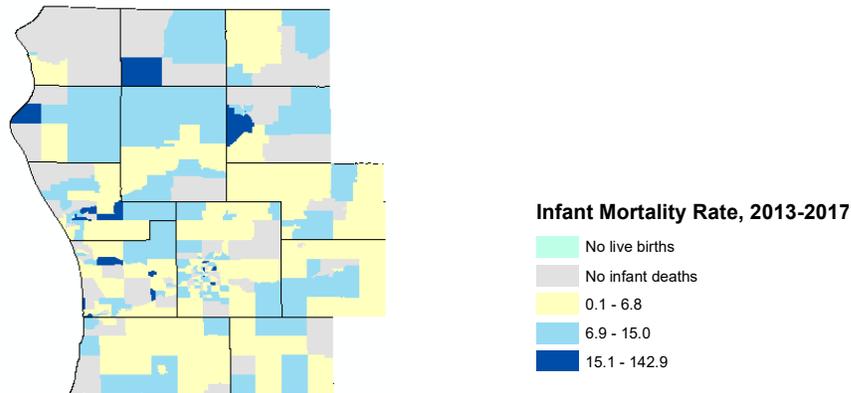
Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

3

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the infant mortality rates within prosperity region 4 from 2010 through 2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. The infant mortality rate in prosperity region 4 has fluctuated quite a bit over the last eight years, but appears to be on a downward trend since 2015. In 2017, the infant mortality rate was 6.8 infant deaths per 1,000 live births for the State of Michigan and 4.9 infant deaths per 1,000 live births within prosperity region 4.

Infant Mortality Rates by Census Tract, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)



Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

8/23/2019

Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

4

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by census tract within prosperity region 4 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Light green: no live births;

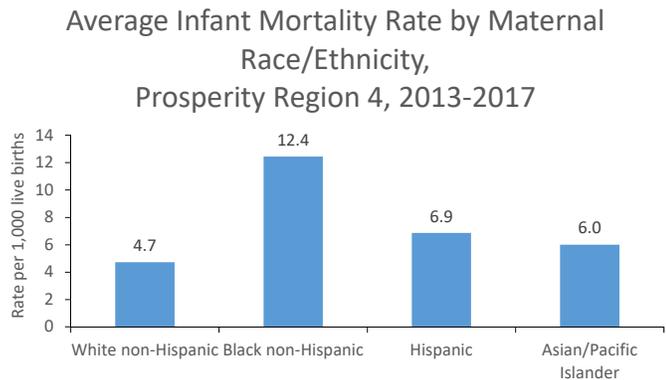
Grey: no infant deaths;

Yellow: below the mean of rates in Michigan (0.1 - 6.8 deaths per 1,000 live births);

Light blue: between the mean and mean + one standard deviation of rates in Michigan (6.9 – 15.0 deaths per 1,000 live births);

Dark blue: above the mean + one standard deviation of rates in Michigan (15.1 – 142.9 deaths per 1,000 live births).

Infant Mortality Rates by Maternal Race/Ethnicity, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)



Maternal Race/Ethnicity	# Live Births	# Infant Death	IMR
White non-Hispanic	73,477	347	4.7
Black non-Hispanic	8,274	103	12.4
Hispanic	11,357	78	6.9
Asian/Pacific Islander	2,163	13	6.0
American Indian	206	DNS	DNS

DNS: data not sufficient (0<N<6).

2013-2017 Michigan Rates

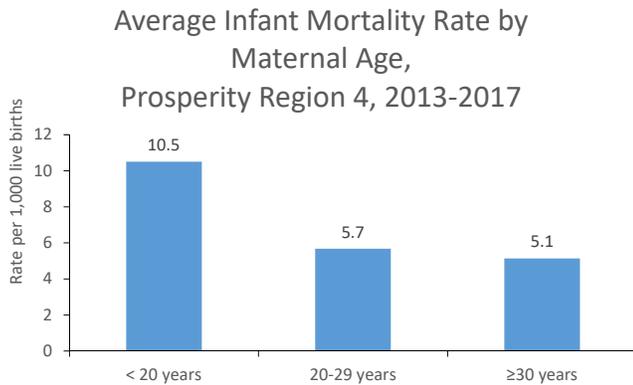
White, nH = 5.1
 Black, nH = 13.0
 Hispanic = 7.2
 Asian/Pacific Islander = 4.2

Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

8/23/2019
 Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by maternal race/ethnicity within prosperity region 4 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. For 2013- 2017, there were some differences in infant mortality rates by maternal race and ethnicity within prosperity region 4, from a high of 12.4 deaths per 1,000 live births for Black non-Hispanic women to a low of 4.7 deaths per 1,000 live births for White non-Hispanic women. These statistics are comparable to the overall state rates by race and ethnicity with the exception of Asian/Pacific Islander mothers (6.0 deaths per 1,000 live births in prosperity region 4 compared to 4.2 deaths per 1,000 live births for the State of Michigan overall).

Infant Mortality Rates by Maternal Age, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)



Maternal Age	# Live Births	# Infant Death	IMR
< 20 years	5,711	60	10.5
20-29 years	54,287	308	5.7
≥30 years	38,115	196	5.1

2013-2017 Michigan Rates
 < 20 years = 11.1
 20-29 years = 7.1
 ≥30 years = 5.7

Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

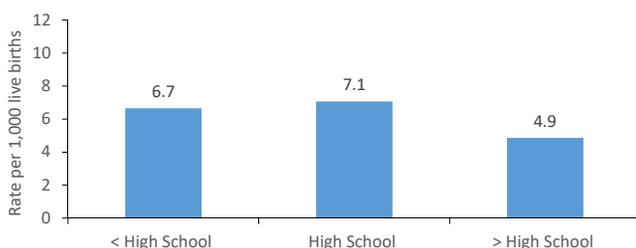
8/23/2019
 Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

6

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by maternal age within prosperity region 4 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. For 2013- 2017, the infant mortality rate for prosperity region 4 was 10.5 deaths per 1,000 live births among women aged less than 20 years, 5.7 deaths per 1,000 live births among women aged between 20 and 29 years, and 5.1 deaths per 1,000 live births among women aged over 30 years. These statistics are slightly lower than the comparable overall state rates by maternal age.

Infant Mortality Rates by Maternal Education, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)

Average Infant Mortality Rate by Maternal Education, Prosperity Region 4, 2013-2017



Maternal Education	# Live Births	# Infant Death	IMR
< High School	11,713	78	6.7
High School	26,579	188	7.1
> High School	59,484	289	4.9

2013-2017 Michigan Rates
 < HS = 10.4
 HS = 8.3
 > HS = 5.1

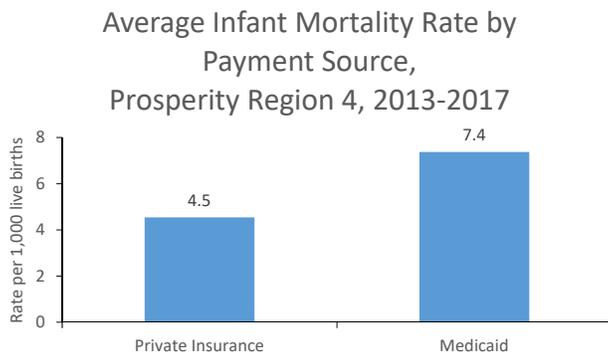
Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

8/23/2019
 Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

7

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by maternal education within prosperity region 4 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. For 2013- 2017, the infant mortality rate for prosperity region 4 was 6.7 deaths per 1,000 live births among women who did not finish high school, 7.1 deaths per 1,000 live births among women who just finished high school, and 4.9 deaths per 1,000 live births among women who had more than a high school education. These statistics are lower than the comparable overall state rates by maternal age.

Infant Mortality Rates by Payment Source, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)



Payment Source	# Live Births	# Infant Death	IMR
Private Insurance	56,544	257	4.5
Medicaid	38,216	282	7.4

2013-2017 Michigan Rates
 Private Insurance = 5.0
 Medicaid = 8.7

Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

8/23/2019
 Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

8

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by payment source within prosperity region 4 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013- 2017, the infant mortality rate for the state of Michigan was higher among women using Medicaid as the payment source (8.7 deaths per 1,000 live births) than those using private insurance (5.0 deaths per 1,000 live births). For 2013-2017, the infant mortality rate for prosperity region 4 was higher among women using Medicaid as the payment source (7.4 deaths per 1,000 live births) than women using private insurance (4.5 deaths per 1,000 live births). This comparison looks very similar when looking at the overall state rates by payment source.

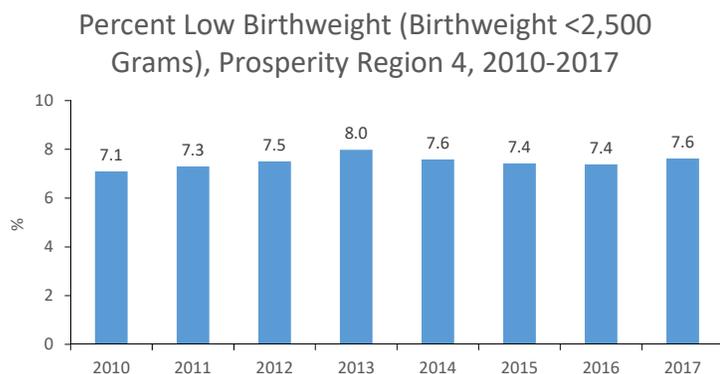
Low Birthweight (LBW), Prosperity Region 4, 2010-2017

8/23/2019

9

The next several slides contain updated low birthweight statistics for prosperity region 4 in the State of Michigan.

Low Birthweight, Prosperity Region 4, 2010-2017



2017 Michigan Percent = 8.8

Year	# Live Births	# LBW	LBW %
2010	19,665	1,396	7.1
2011	19,681	1,436	7.3
2012	19,811	1,487	7.5
2013	19,591	1,564	8.0
2014	19,802	1,502	7.6
2015	19,625	1,456	7.4
2016	19,709	1,455	7.4
2017	19,387	1,478	7.6

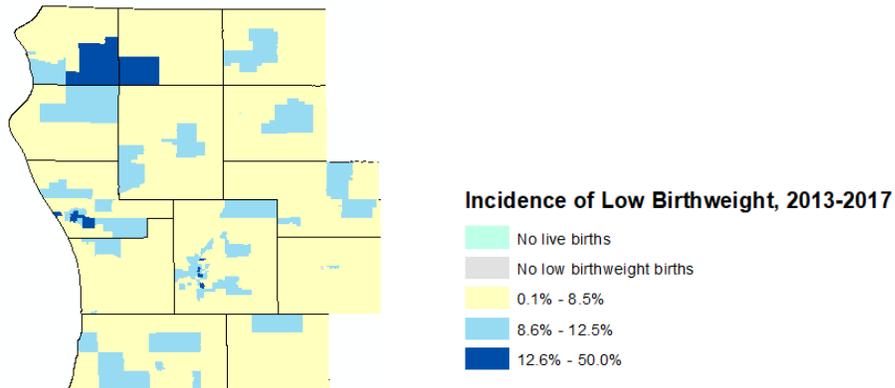
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

10

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of low birthweight within prosperity region 4 from 2010 through 2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. The incidence of low birthweight in prosperity region 4 has remained relatively stable over the last eight years. In 2017, the incidence of low birthweight was 8.8% for the State of Michigan and 7.6% for prosperity region 4.

Low Birthweight by Census Tract, Prosperity Region 4, 2013-2017



Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

11

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by census tract within prosperity region 4 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100.

Light green: no live births;

Grey: no low birthweight births;

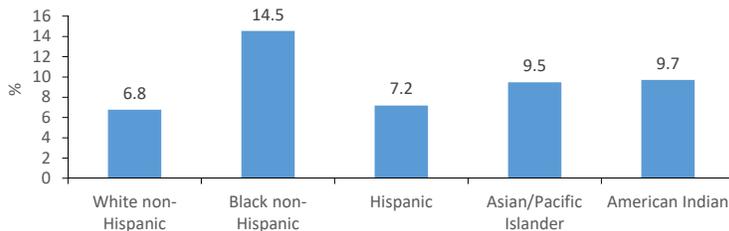
Yellow: below the mean of rates in Michigan (0.1% - 8.5%);

Light blue: between the mean and mean + one standard deviation of rates in Michigan (8.6% - 12.5%);

Dark blue: above the mean + one standard deviation of rates in Michigan (12.6% - 50.0%).

Low Birthweight by Maternal Race/Ethnicity, Prosperity Region 4, 2013-2017

Average Percent Low Birthweight (Birthweight <2,500 Grams) by Maternal Race/Ethnicity, Prosperity Region 4, 2013-2017



Maternal Race/Ethnicity	# Live Births	# LBW	LBW %
White non-Hispanic	73,477	4,971	6.8
Black non-Hispanic	8,274	1,203	14.5
Hispanic	11,357	816	7.2
Asian/Pacific Islander	2,163	205	9.5
American Indian	206	20	9.7

2013-2017 Michigan Percentages
 White, nH = 7.0
 Black, nH = 14.3
 Hispanic = 7.3
 Asian/Pacific Islander = 9.0
 American Indian = 7.9

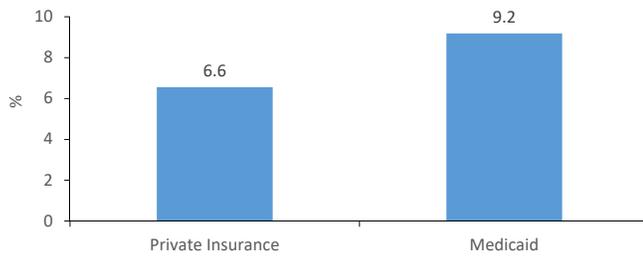
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by maternal race/ethnicity within prosperity region 4 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. For 2013- 2017, there were some differences in the incidence of low birthweight by maternal race and ethnicity within prosperity region 4, from a high of 14.5% for Black non-Hispanic women to a low of 6.8% for White non-Hispanic women. When looking at the State of Michigan as a whole, White non-Hispanic women report the lowest incidence of low birthweight at 7.0% and Black non-Hispanic women report the highest incidence at 14.3%.

Low Birthweight by Payment Source, Prosperity Region 4, 2013-2017

Average Percent Low Birthweight (Birthweight <2,500 Grams) by Payment Source, Prosperity Region 4, 2013-2017



Payment Source	# Live Births	# LBW	LBW %
Private Insurance	56,544	3,705	6.6
Medicaid	38,216	3,508	9.2

2013-2017 Michigan Percentages
 Private Insurance = 7.2
 Medicaid = 10.1

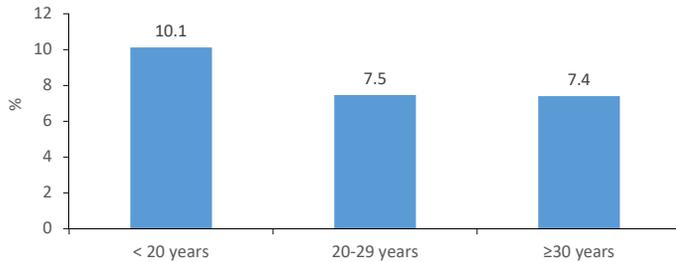
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by payment source within prosperity region 4 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of low birthweight for prosperity region 4 was higher among women using Medicaid as the payment source (9.2%) than women using private insurance (6.6%). This comparison looks very similar when looking at the overall state rates by payment source.

Low Birthweight by Maternal Age, Prosperity Region 4, 2013-2017

Average Percent Low Birthweight (Birthweight < 2,500 Grams) by Maternal Age, Prosperity Region 4, 2013-2017



Maternal Age	# Live Births	# LBW	LBW %
< 20 years	5,711	578	10.1
20-29 years	54,287	4,054	7.5
≥30 years	38,115	2,823	7.4

2013-2017 Michigan Percentages
 < 20 years = 10.4
 20-29 years = 8.4
 ≥30 years = 8.4

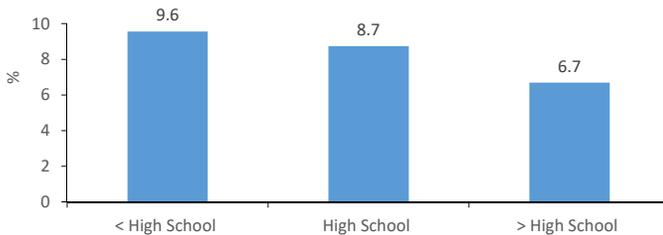
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by maternal age within prosperity region 4 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of low birthweight for prosperity region 4 was 10.1% among women aged less than 20 years, 7.5% among women aged between 20 and 29 years, and 7.4% among women aged over 30 years. These statistics are comparable to the overall state rates by maternal age.

Low Birthweight by Maternal Education, Prosperity Region 4, 2013-2017

Average Percent Low Birthweight (Birthweight <2,500 Grams) by Maternal Education, Prosperity Region 4, 2013-2017



Maternal Education	# Live Births	# LBW	LBW %
< High School	11,713	1,120	9.6
High School	26,579	2,322	8.7
> High School	59,484	3,981	6.7

2013-2017 Michigan Percentages
 < HS = 11.0
 HS = 9.8
 > HS = 7.4

Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by maternal education within prosperity region 4 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of low birthweight for prosperity region 4 was 9.6% among women who did not finish high school, 8.7% among women who just finished high school, and 6.7% among women who had more than a high school education. These statistics are slightly lower than the comparable overall state rates by maternal education.

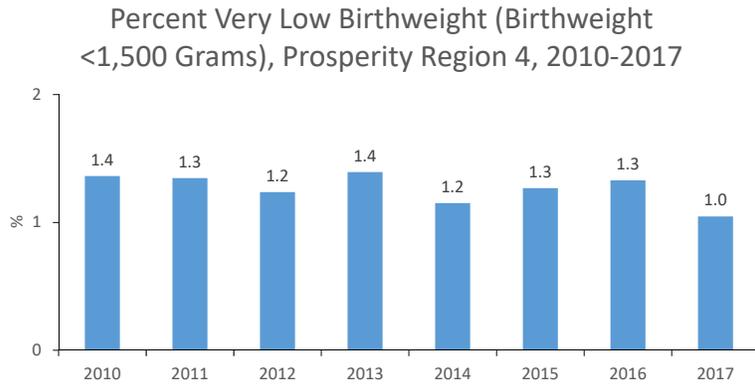
Very Low Birthweight (VLBW), Prosperity Region 4, 2010-2017

8/23/2019

16

The next several slides contain updated very low birthweight statistics for prosperity region 4 in the State of Michigan.

Very Low Birthweight, Prosperity Region 4, 2010-2017



2017 Michigan Percent = 1.5

Year	# Live Births	# VLBW	VLBW %
2010	19,665	268	1.4
2011	19,681	265	1.3
2012	19,811	245	1.2
2013	19,591	273	1.4
2014	19,802	228	1.2
2015	19,625	249	1.3
2016	19,709	262	1.3
2017	19,387	203	1.0

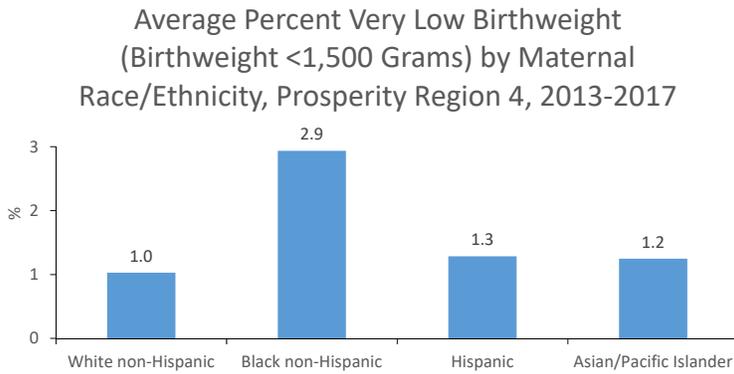
Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

17

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of very low birthweight within prosperity region 4 from 2010 through 2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. The incidence of very low birthweight in prosperity region 4 has remained relatively stable over the last eight years. In 2017, the incidence of very low birthweight was 1.5% for the State of Michigan and 1.0% in prosperity region 4.

Very Low Birthweight by Maternal Race/Ethnicity, Prosperity Region 4, 2013-2017



Maternal Race/Ethnicity	# Live Births	# VLBW	VLBW %
White non-Hispanic	73,477	756	1.0
Black non-Hispanic	8,274	243	2.9
Hispanic	11,357	146	1.3
Asian/Pacific Islander	2,163	27	1.2
American Indian	206	DNS	DNS

DNS: data not sufficient (0<N<6).

2013-2017 Michigan Percentages

White, nH = 1.1
 Black, nH = 3.2
 Hispanic = 1.3
 Asian/Pacific Islander = 1.2

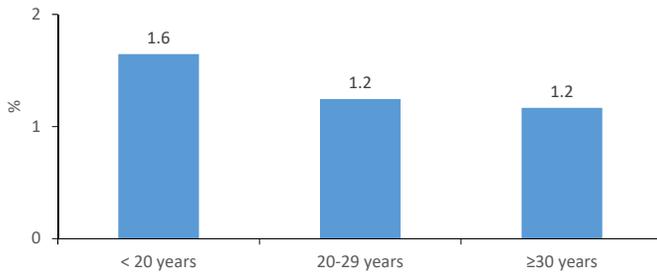
Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by maternal race/ethnicity within prosperity region 4 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. For 2013- 2017, there were some differences in the incidence of very low birthweight by maternal race and ethnicity within prosperity region 4, from a high of 2.9% for Black non-Hispanic women to a low of 1.0% for White non-Hispanic women. When looking at the State of Michigan as a whole, American Indian women report the lowest incidence of very low birthweight at 1.0% and Black non-Hispanic women report the highest incidence at 3.2%.

Very Low Birthweight by Maternal Age, Prosperity Region 4, 2013-2017

Average Percent Very Low Birthweight (Birthweight < 1,500 Grams) by Maternal Age, Prosperity Region 4, 2013-2017



Maternal Age	# Live Births	# VLBW	VLBW %
< 20 years	5,711	94	1.6
20-29 years	54,287	676	1.2
≥30 years	38,115	445	1.2

2013-2017 Michigan Percentages

< 20 years = 2.0

20-29 years = 1.5

≥30 years = 1.5

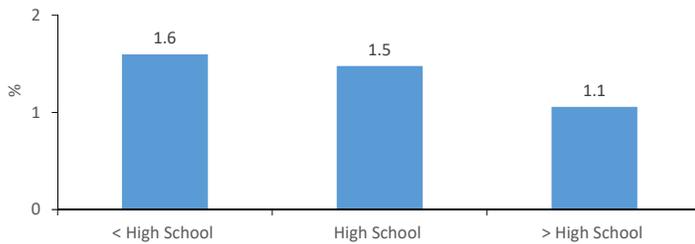
Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by maternal age within prosperity region 4 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of very low birthweight for prosperity region 4 was 1.6% among women aged less than 20 years, 1.2% among women aged between 20 and 29 years, and 1.2% among women aged over 30 years. These statistics are slightly lower than the comparable overall state rates by maternal age.

Very Low Birthweight by Maternal Education, Prosperity Region 4, 2013-2017

Average Percent Very Low Birthweight (Birthweight <1,500 Grams) by Maternal Education, Prosperity Region 4, 2013-2017



Maternal Education	# Live Births	# VLBW	VLBW %
< High School	11,713	187	1.6
High School	26,579	393	1.5
> High School	59,484	629	1.1

2013-2017 Michigan Percentages
 < HS = 1.9
 HS = 1.8
 > HS = 1.3

Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

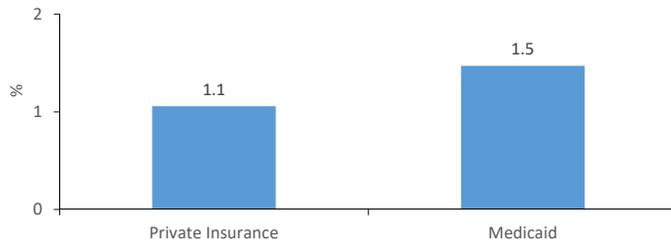
8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

20

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by maternal education within prosperity region 4 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of very low birthweight for prosperity region 4 was 1.6% among women who did not finish high school, 1.5% among women who just finished high school, and 1.1% among women who had more than a high school education. These statistics are slightly lower than the comparable overall state rates by maternal education.

Very Low Birthweight by Payment Source, Prosperity Region 4, 2013-2017

Average Percent Very Low Birthweight (Birthweight <1,500 Grams) by Payment Source, Prosperity Region 4, 2013-2017



Payment Source	# Live Births	# VLBW	VLBW %
Private Insurance	56,544	598	1.1
Medicaid	38,216	563	1.5

2013-2017 Michigan Percentages
Private Insurance = 1.3
Medicaid = 1.8

Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

21

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by payment source within prosperity region 4 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of very low birthweight for prosperity region 4 was higher among women using Medicaid as the payment source (1.5%) than women using private insurance (1.1%). This comparison looks very similar when looking at the overall state rates by payment source.

Preterm Birth (PTB), Prosperity Region 4, 2010-2017

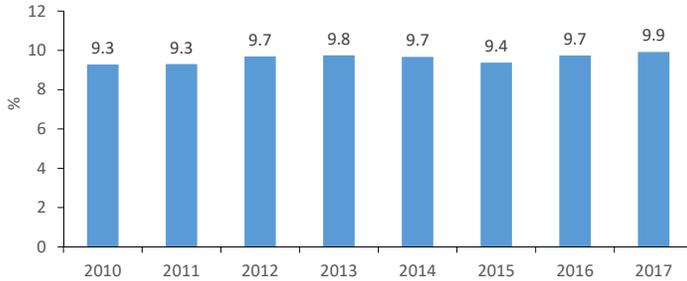
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22

The next several slides contain updated preterm birth statistics for prosperity region 4 in the State of Michigan.

Preterm Birth, Prosperity Region 4, 2010-2017

Percent Preterm Birth (Estimated Gestational Age <37 Weeks), Prosperity Region 4, 2010-2017



2017 Michigan Percent = 10.2

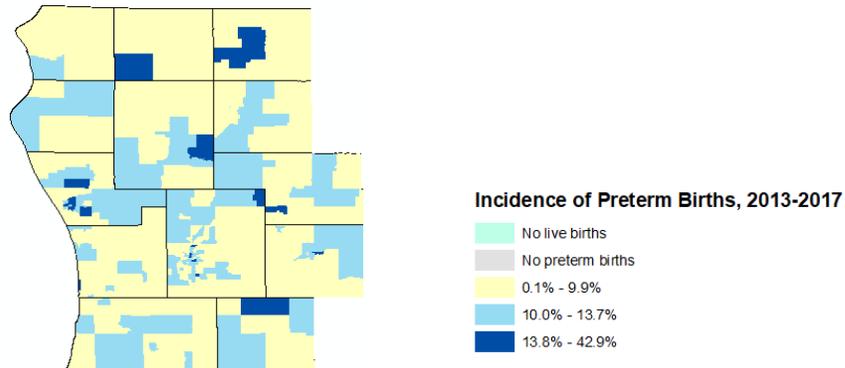
Year	# Live Births	# PTB	PTB %
2010	19,665	1,825	9.3
2011	19,681	1,832	9.3
2012	19,811	1,920	9.7
2013	19,591	1,911	9.8
2014	19,802	1,915	9.7
2015	19,625	1,841	9.4
2016	19,709	1,920	9.7
2017	19,387	1,923	9.9

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of preterm birth within prosperity region 4 from 2010 through 2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. The incidence of preterm birth in prosperity region 4 has remained relatively stable over the last eight years. In 2017, the incidence of preterm birth was 10.2% for the State of Michigan and 9.9% in prosperity region 4.

Preterm Birth by Census Tract, Prosperity Region 4, 2013-2017



Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

24

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by census tract within prosperity region 4 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100.

Light green: no live births;

Grey: no preterm births;

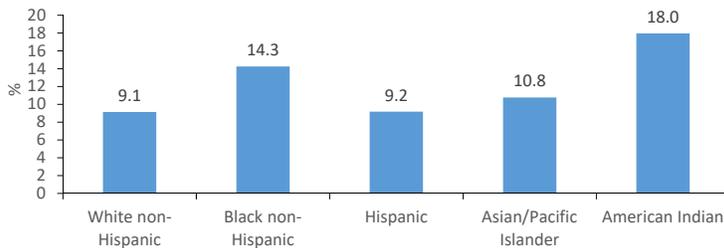
Yellow: below the mean of rates in Michigan (0.1% - 9.9%);

Light blue: between the mean and mean + one standard deviation of rates in Michigan (10.0% - 13.7%);

Dark blue: above the mean + one standard deviation of rates in Michigan (13.8% - 42.9%).

Preterm Birth by Maternal Race/Ethnicity, Prosperity Region 4, 2013-2017

Average Percent Preterm Birth (Estimated Gestational Age <37 Weeks) by Maternal Race/Ethnicity, Prosperity Region 4, 2013-2017



Maternal Race/Ethnicity	# Live Births	# PTB	PTB %
White non-Hispanic	73,477	6,722	9.1
Black non-Hispanic	8,274	1,180	14.3
Hispanic	11,357	1,042	9.2
Asian/Pacific Islander	2,163	233	10.8
American Indian	206	37	18.0

2013-2017 Michigan Percentages

White, nH = 8.9
 Black, nH = 14.2
 Hispanic = 9.1
 Asian/Pacific Islander = 8.6
 American Indian = 10.9

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

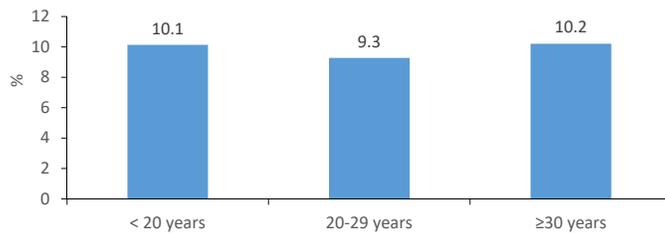
8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

25

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by maternal race/ethnicity within prosperity region 4 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. For 2013- 2017, there were some differences in the incidence of preterm birth by maternal race and ethnicity within prosperity region 4, from a high of 18.0% for American Indian women to a low of 9.1% for White non-Hispanic women. When looking at the State of Michigan as a whole, Asian/Pacific Islander women report the lowest incidence of preterm birth at 8.6% and Black non-Hispanic women report the highest incidence at 14.2%.

Preterm Birth by Maternal Age, Prosperity Region 4, 2013-2017

Average Percent Preterm Birth (Estimated Gestational Age <37 Weeks) by Maternal Age, Prosperity Region 4, 2013-2017



Maternal Age	# Live Births	# PTB	PTB %
< 20 years	5,711	579	10.1
20-29 years	54,287	5,039	9.3
≥30 years	38,115	3,891	10.2

2013-2017 Michigan Percentages
 < 20 years = 10.4
 20-29 years = 9.4
 ≥30 years = 10.5

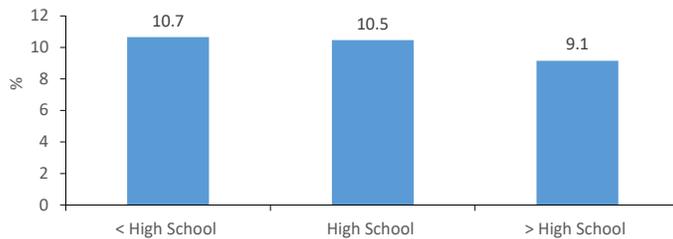
Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by maternal age within prosperity region 4 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. For 2013-2017, the incidence of preterm birth for prosperity region 4 was 10.1% among women aged less than 20 years, 9.3% among women aged between 20 and 29 years, and 10.2% among women aged over 30 years. These statistics were comparable to the overall state rates by maternal age.

Preterm Birth by Maternal Education, Prosperity Region 4, 2013-2017

Average Percent Preterm Birth (Estimated Gestational Age <37 Weeks) by Maternal Education, Prosperity Region 4, 2013-2017



Maternal Education	# Live Births	# PTB	PTB %
< High School	11,713	1,248	10.7
High School	26,579	2,782	10.5
> High School	59,484	5,442	9.1

2013-2017 Michigan Percentages
 < HS = 11.3
 HS = 10.9
 > HS = 9.2

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

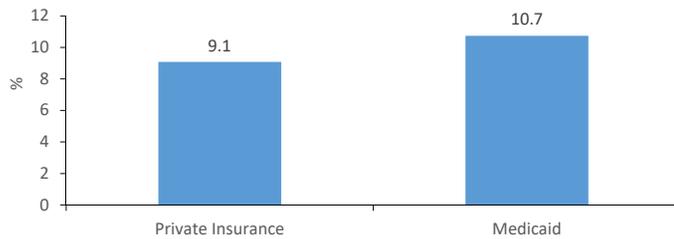
8/23/2019
 Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

27

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by maternal education within prosperity region 4 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. For 2013-2017, the incidence of preterm birth for prosperity region 4 was 10.7% among women who did not finish high school, 10.5% among women who just finished high school, and 9.1% among women who had more than a high school education. These statistics were slightly lower than the comparable overall state rates by maternal education.

Preterm Birth by Payment Source, Prosperity Region 4, 2013-2017

Average Percent Preterm Birth (Estimated Gestational Age <37 Weeks) by Payment Source, Prosperity Region 4, 2013-2017



Payment Source	# Live Births	# PTB	PTB %
Private Insurance	56,544	5,135	9.1
Medicaid	38,216	4,101	10.7

2013-2017 Michigan Percentages
Private Insurance = 9.2
Medicaid = 10.9

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

8/23/2019
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

28

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by payment source within prosperity region 4 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of preterm birth for prosperity region 4 was higher among women using Medicaid as the payment source (10.7%) than women using private insurance (9.1%). These statistics were comparable to the overall state rates by payment source.

Birth Defects Prevalence, by Race/ethnicity and Prosperity Region, 2016

8/23/2019

29

The next two slides contain updated birth defects prevalence statistics for the State of Michigan as a whole and by Michigan prosperity region.

Birth Defect Prevalence Rates by Race/ethnicity: MBDR, 2016

- Throughout birth years 2006-2016, the birth defect prevalence rate for Michigan remained fairly steady at an average rate of 1,189.3 cases per 10,000 live births.
- In 2016, the race-specific birth defect prevalence rate for cases born to black mothers (1,485.9 cases per 10,000 live births) exceeded that of cases born to white mothers (925.6 cases per 10,000 live births) and cases born to mothers of “other” races (1,372.5 cases per 10,000 live births).
- In 2016, the ethnicity-specific birth defect prevalence rate for cases born to a mother reporting Arabic ethnicity (1,330.1 cases per 10,000 live births) was greater than that of cases born to a mother reporting Hispanic ethnicity (1,016.9 cases per 10,000 live births).

* Total reported birth defect cases for all diagnostic groupings per 10,000 live births
 **Maternal Race/ethnicity as reported on birth record

Figure 1. Statewide Maternal Race-Specific Birth Defect Prevalence Rates: MBDR, 2016

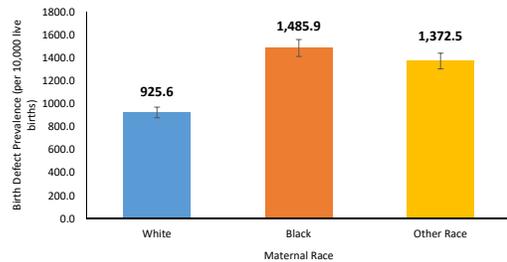
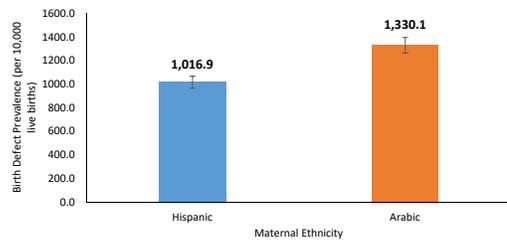


Figure 2. Statewide Maternal Ethnicity-Specific Birth Defect Prevalence Rates: MBDR, 2016



This slide uses data from the Michigan Birth Defects Registry and details the Michigan birth defects prevalence by maternal race and ethnicity for 2016.

The average overall birth defects prevalence for the State of Michigan during 2006-2016 was 1,189.3 cases per 10,000 live births.

In 2016, the birth defects prevalence among black mothers (at 1,485.9 cases per 10,000 live births) and mothers of other races (at 1,372.5 cases per 10,000 live births) was higher than that of white mothers (at 925.6 cases per 10,000 live births).

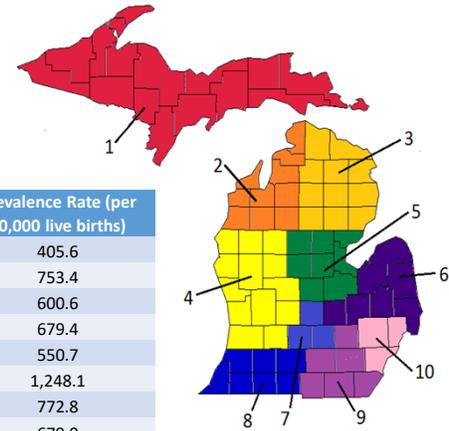
Furthermore, the birth defects prevalence among Hispanic (at 1,016.9 cases per 10,000 live births) and Arabic mothers (at 1,330.1 cases per 10,000 live births) was greater than that of white mothers (at 925.6 cases per 10,000 live births) in 2016.

Disclaimer: Data are based on passive reporting which means it is the responsibility of facilities to identify and report cases of birth defects. Not all facilities report cases as completely and timely as would be the ideal. Children diagnosed and treated in facilities in other states may be missed which will significantly affect the completeness of data for Michigan’s border counties.

Birth Defect Prevalence Rates by Prosperity Region: MBDR, 2016

- The State of Michigan is broken up into 10 prosperity regions based on shared geographic, demographic, and economic interests.
- In 2016, Michigan prosperity regions 6 and 10 reported the highest birth defect prevalence rates of 1,248.1 and 1,411.7 cases per 10,000 live births.
- The prosperity region that reported the lowest birth defect prevalence was region 1 with a prevalence rate of 405.6 cases per 10,000 live births.

Region	Number of Cases	Prevalence Rate (per 10,000 live births)
1	113	405.6
2	224	753.4
3	103	600.6
4	1,339	679.4
5	321	550.7
6	1,150	1,248.1
7	414	772.8
8	620	679.0
9	1,258	1,201.4
10	6,520	1,411.7
Total	12,062	1,063.9



*All statewide data reported from the Michigan Birth Defects Registry (MBDR) for birth year 2016
 ** Total reported birth defect cases for all diagnostic groupings per 10,000 live births
 ***Prevalence rates are based on births to mothers living in Michigan at the time of delivery.
 ****Regions approximate prosperity region boundaries

Statewide Birth Defect Prevalence Rates by Prosperity Region with Prosperity Region Map: MBDR, 2016

This slide uses data from the Michigan Birth Defects Registry and details birth defects prevalence by prosperity region for 2016.

In 2016, regions 10, 6, and 9 reported the highest birth defects prevalence (at 1,411.7, 1,248.1, and 1,201.4 cases per 10,000 live births, respectively), while regions 1, 5, and 3 reported the lowest birth defects prevalence (at 405.6, 550.7, and 600.6 cases per 10,000 live births, respectively).

Disclaimer: Data are based on passive reporting which means it is the responsibility of facilities to identify and report cases of birth defects. Not all facilities report cases as completely and timely as would be the ideal. Children diagnosed and treated in facilities in other states may be missed which will significantly affect the completeness of data for Michigan's boarder counties.

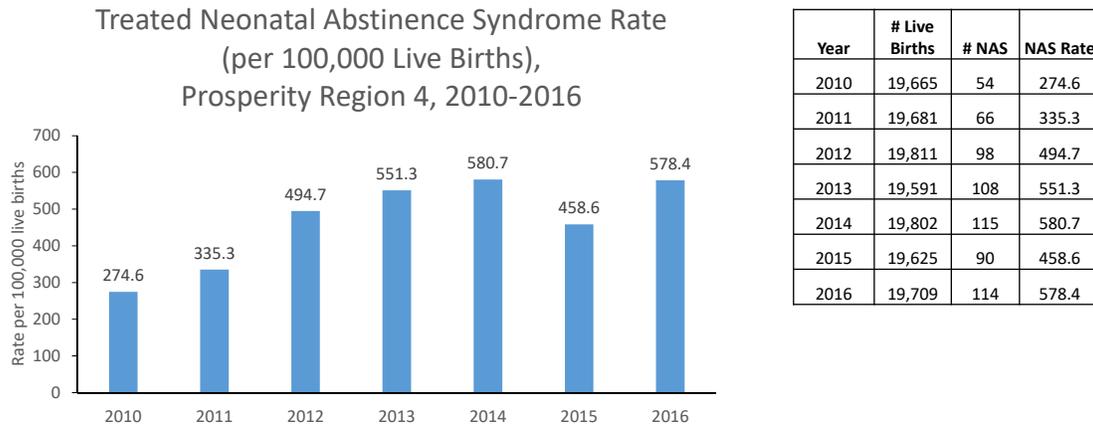
Treated Neonatal Abstinence Syndrome (NAS) Prosperity Region 4, 2010-2016

8/23/2019

32

The next couple slides contain updated treated neonatal abstinence syndrome statistics for prosperity region 4 in the State of Michigan.

Neonatal Abstinence Syndrome, Prosperity Region 4, 2010-2016 (Rate per 100,000 Live Births)



8/23/2019

Data source: MDHHS Division for Vital Records and Health Statistics. Michigan resident live birth file linked to the Michigan Inpatient Hospital Database.

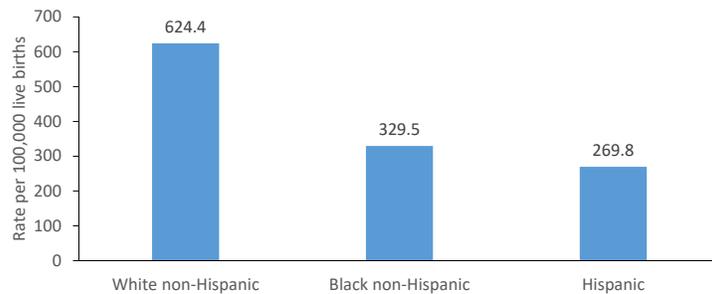
33

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics and Michigan Inpatient Database, this slide shows the incidence of treated neonatal abstinence syndrome (NAS) within prosperity region 4 from 2010 through 2016. Infants with treated NAS were identified by any diagnosis of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code of 779.5 (drug withdrawal syndrome in newborn) through September 2015 or Tenth Revision (ICD-10-CM) diagnosis code of P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction) starting in October 2015. In 2016, the incidence of neonatal abstinence syndrome in prosperity region 4 was 578.4 per 100,000 live births.

Data source: Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Bureau of Epidemiology and Population Health, Michigan Department of Health and Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health and Hospital Association Service Corporation (MHASC).

Neonatal Abstinence Syndrome by Maternal Race/Ethnicity, Prosperity Region 4, 2012-2016

Average Treated Neonatal Abstinence Syndrome Rate
(per 100,000 Live Births) by Maternal Race/Ethnicity,
Prosperity Region 4, 2012-2016



Maternal Race/Ethnicity	# Live Births	# NAS	NAS Rate
White non-Hispanic	73,995	462	624.4
Black non-Hispanic	8,195	27	329.5
Hispanic	11,490	31	269.8
American Indian	203	DNS	DNS

DNS: data not sufficient (0<N<6).

8/23/2019

Data source: MDHHS Division for Vital Records and Health Statistics. Michigan resident live birth file linked to the Michigan Inpatient Hospital Database.

34

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of treated neonatal abstinence syndrome (NAS) by maternal race/ethnicity within prosperity region 4 for 2012-2016. Infants with treated NAS were identified by any diagnosis of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code of 779.5 (drug withdrawal syndrome in newborn) through September 2015 or Tenth Revision (ICD-10-CM) diagnosis code of P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction) starting in October 2015. In 2012-2016, there were some differences in the incidence of treated neonatal abstinence syndrome by maternal race and ethnicity, from a high of 624.4 per 100,000 live births for White non-Hispanic women to a low of 269.8 for Hispanic women.

Data source: Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Bureau of Epidemiology and Population Health, Michigan Department of Health and Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health and Hospital Association Service Corporation (MHASC).

Sleep-Related Infant Death Rate Michigan, 2010-2017 Prosperity Region 4, 2010-2015

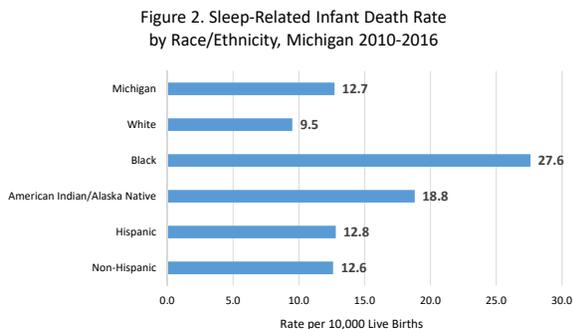
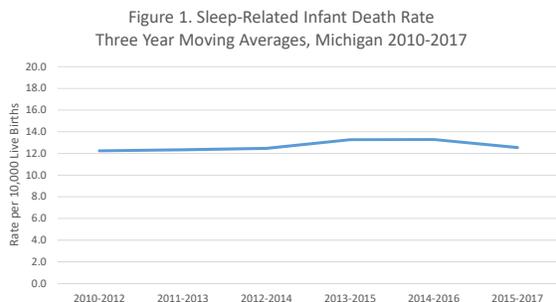
8/23/2019

35

The next couple slides contain sleep-related infant death statistics for prosperity region 4 in the State of Michigan.

Overview of Sleep-Related Infant Deaths in Michigan

- Between 2010 and 2017 there were 1,136 sleep-related infant deaths in Michigan.
- The three-year moving average for sleep-related infant death decreased in 2015-2017, after having experienced an increasing trend for several years.
- Between 2010 and 2016 White infants experience lower sleep-related infant death rates as compared to Black infants and American Indian/Alaska Native infants.
- Between 2010 and 2016 Hispanic and non-Hispanic infants experienced similar sleep-related infant death rates.

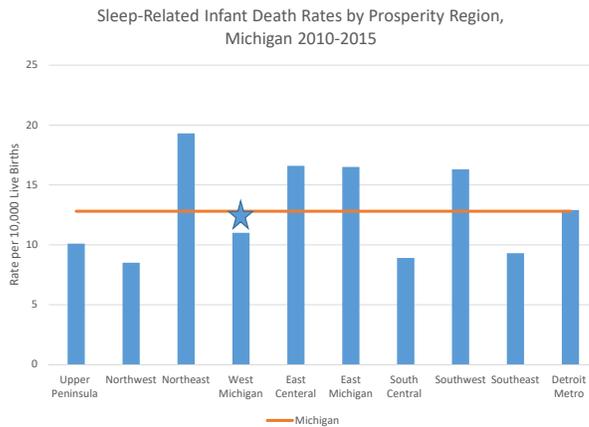


Using data from the Michigan Public Health Institute (MPHI), Sudden Unexpected Infant Death (SUID) case registry this slide shows the three-year moving average and sleep-related infant death rate by race/ethnic demographic breakdown. A death is included in the MPHI SUID registry if it occurs in Michigan resident infants less than 1 year of age suddenly and unexpectedly. Sleep-related infant deaths include sudden infant death syndrome (SIDS), undetermined/sudden unexplained infant death (SUID), suffocation/positional asphyxia and other causes where the sleep-environment likely contributed to the death.

The three-year moving average increased from 12.2 per 10,000 live births in 2010 to 2012 to 13.3 per 10,000 live births in 2014 to 2016, before decreasing to 12.5 per 10,000 live births in 2015 to 2017.

Data from 2010 to 2016 show Black infants experience the highest rate of Sudden Unexpected Infant Death (27.6 per 10,000 live births) followed by American Indian and Alaska Native Infants (18.8 per 10,000 live births). White infants experience the lowest rate of Sudden Unexpected Infant Deaths at 9.5 per 10,000 live births.

Sleep-Related Infant Death Rate, Prosperity Region 4, 2010-2015 (rate per 10,000 live births)



- Between 2010 and 2015 there were **130** sleep-related infant deaths in Region Four.
- Between 2010 and 2015 the sleep-related infant death rate in Region Four was **11.0** per 10,000 live births.
- During this same time period, the Region Four sleep-related infant death rate was **lower** than the Michigan sleep-related death rate (12.8 per 10,000 live births).

Using data from the Michigan Public Health Institute, Sudden Unexpected Infant Death (SUID) case registry, this slide shows the sleep-related infant death rate in prosperity region four as compared to other prosperity regions in the state. Between 2010 and 2015, prosperity region four experienced a lower SUID rate as compared to Michigan overall, with a rate of 11.0 per 10,000 live births as compared to 12.8 per 10,000 live births for Michigan.

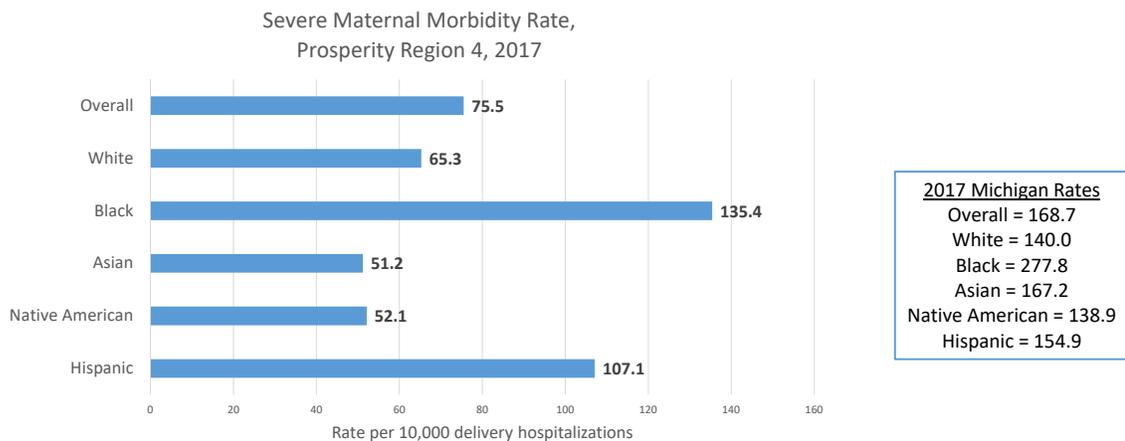
Severe Maternal Morbidity Rate Prosperity Region 4, 2017

8/23/2019

38

The next slide contains maternal morbidity data for prosperity region 4 in the State of Michigan.

Severe Maternal Morbidity, Prosperity Region 4, 2017 (rate per 10,000 delivery hospitalizations)



Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, Michigan Resident Inpatient files, this slide shows severe maternal morbidity per 10,000 delivery hospitalizations, broken down by race and ethnicity. Severe maternal morbidity includes unexpected outcomes of labor and delivery that result in significant short or long-term health consequences. When looking at prosperity region four severe maternal morbidity by race, Black mothers experience the highest rate at 135.4 per 10,000 delivery hospitalizations, this compares to a rate of 75.5 per 100,000 delivery hospitalizations for prosperity region four overall.

Data source: Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Bureau of Epidemiology and Population Health, Michigan Department of Health and Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health and Hospital Association Service Corporation (MHASC).

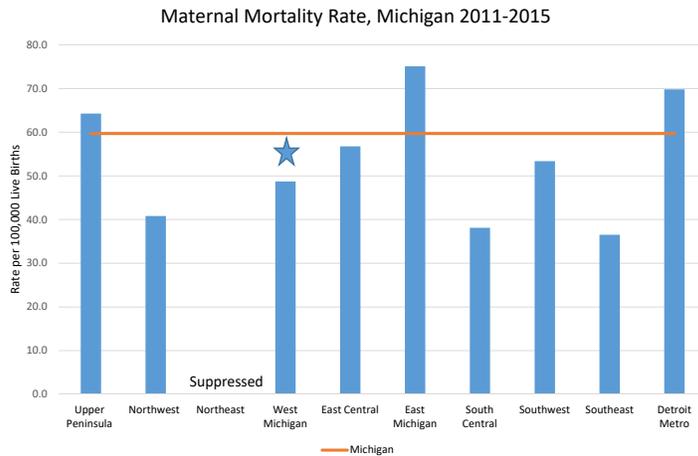
Maternal Mortality Rate Prosperity Region 4, 2011-2015

8/23/2019

40

The next couple slides contain maternal mortality data for prosperity region 4 in the State of Michigan.

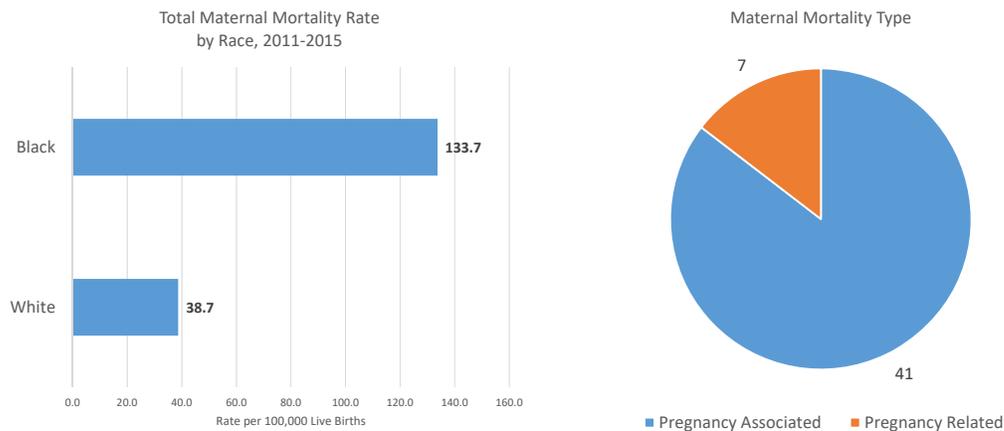
Maternal Mortality Rate, Prosperity Region 4, 2011-2015 (rate per 100,000 live births)



- Maternal deaths include deaths that occur during pregnancy, at delivery or within one year of pregnancy.
- Total maternal mortality includes both pregnancy associated mortality (unrelated to the pregnancy) and pregnancy-related mortality (related to or aggravated by the pregnancy).
- In Region Four there were **48** maternal deaths between 2011 and 2015
- The resulting maternal mortality rate equals **48.7 per 100,000** live births

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics and the Michigan Department of Health and Human Services, Michigan Maternal Mortality Surveillance Program, this slide shows the maternal mortality rate in prosperity region four as compared to the rest of the prosperity regions in Michigan. Maternal mortality is classified as a death that occurs during pregnancy or within one year of pregnancy. Prosperity region four experiences a lower maternal mortality rate than Michigan overall at 48.7 per 100,000 live births as compared to 59.7 per 100,000 live births for Michigan.

Maternal Mortality Characteristics, Prosperity Region 4, 2011-2015



Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics and the Michigan Department of Health and Human Services, Michigan Maternal Mortality Surveillance Program, this slide shows maternal mortality rate by race and mortality type. Maternal mortality is classified as a death that occurs during pregnancy or within one year of pregnancy. Mortality type includes pregnancy-related (related to or aggravated by the pregnancy) and pregnancy associated (cause of death is unrelated to pregnancy)

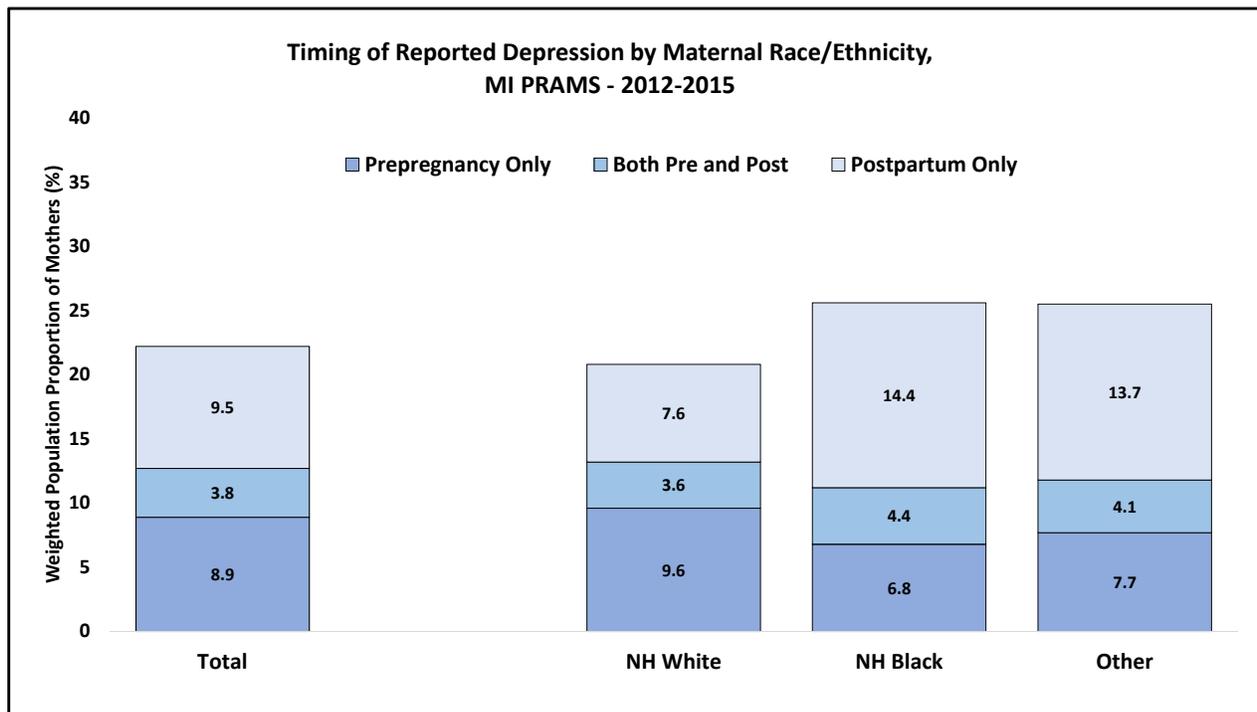
Black mothers experience a maternal mortality rate of 133.7 per 100,000 live births as compared to a rate of 38.7 per 100,000 live births for White mothers in prosperity region four. Of the cases reviewed in region four, 14.5 percent were pregnancy related.

Maternal Depression Michigan & Prosperity Region 4, 2012-2015

8/23/2019

43

The next few slides contain maternal depression data for prosperity region 4 in the State of Michigan.

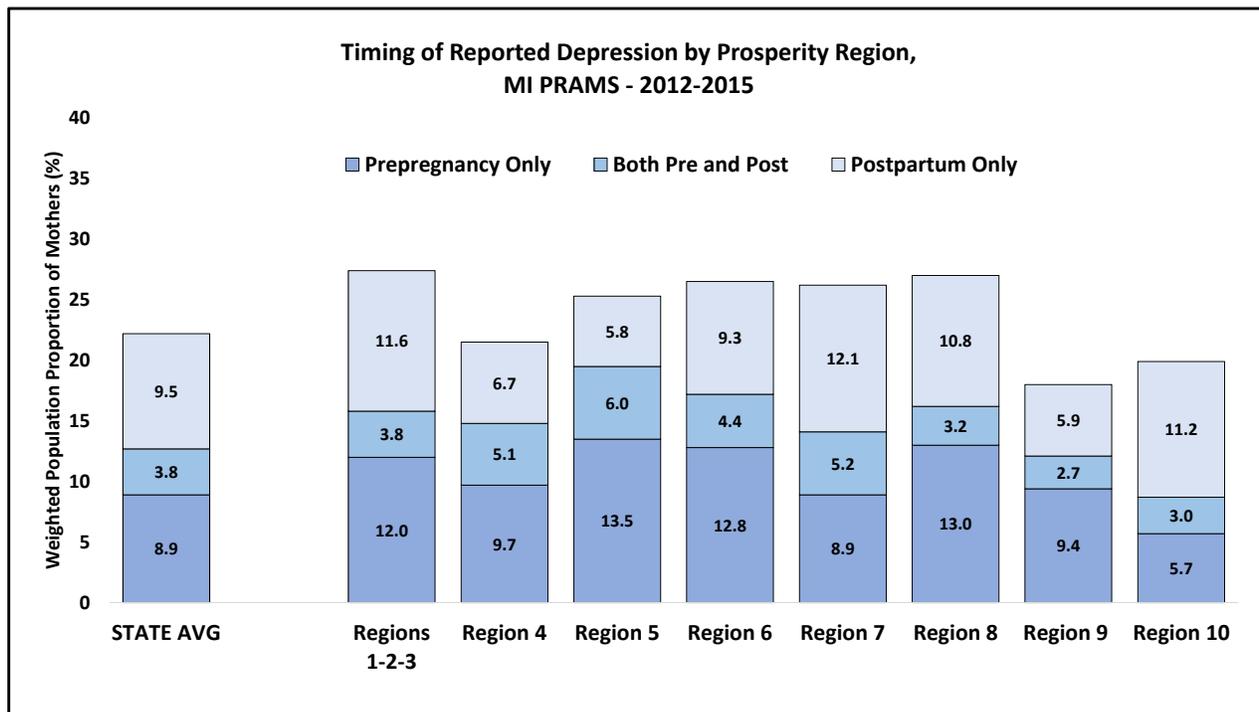


Using data from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS), the following slides show the prevalence of depression before and after pregnancy by maternal race/ethnicity. Numbers are reported as the proportion of mothers of live births reporting a certain condition. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

For the state as a whole: 8.9% of mothers report depression before pregnancy but no postpartum depression; 3.8% reported depression before pregnancy and postpartum depression; and 9.5% reported postpartum depression but no depression before pregnancy. The top two numbers in each bar added together are the proportion of women reporting postpartum depression. For the state as a whole, $9.5\% + 3.8\% = 13.3\%$ of women report depression after pregnancy.

Notably - most women who report postpartum depression did not report depression before pregnancy. Most women who reported depression before pregnancy did not go on to report postpartum depression.

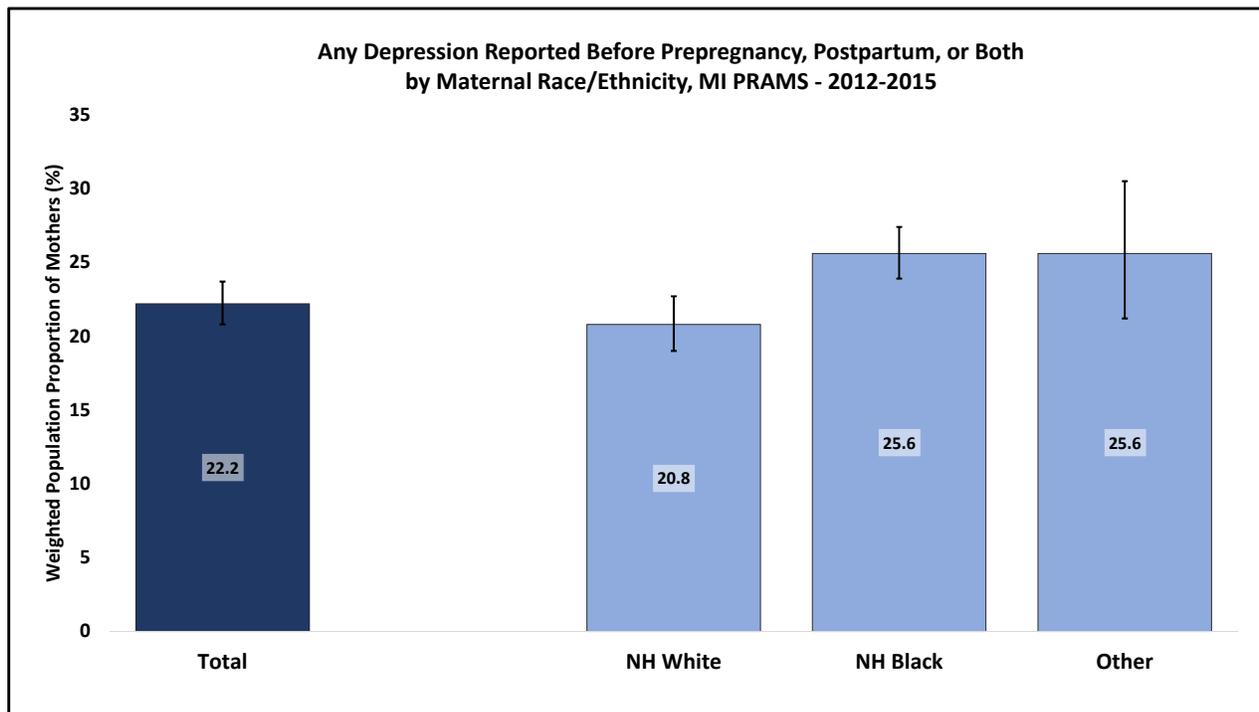
A small proportion of mothers reported depression both before and after pregnancy. There is variation by maternal race/ethnicity. Depression before pregnancy is relatively more common among NHW mothers than NHB mothers. Depression after pregnancy is relatively more common among mothers of NHB and Other race/ethnicity compared to NHW mothers.



Depression by time [before pregnancy only, after pregnancy only, both] is available for sub-state prosperity regions.

Postpartum depression (top two numbers per column) is relatively less common among mothers in prosperity region 9 and is more common among mothers in prosperity region 10. This difference in prosperity region 10 is being driven by significantly more postpartum depression in Wayne County (data not shown).

Due to small numbers in each region, few differences are statistically significant. The most important thing to take from this slide is that no region of the state is without maternal depression before and after pregnancy.



Looking at women reporting depression either before pregnancy and/or after pregnancy:

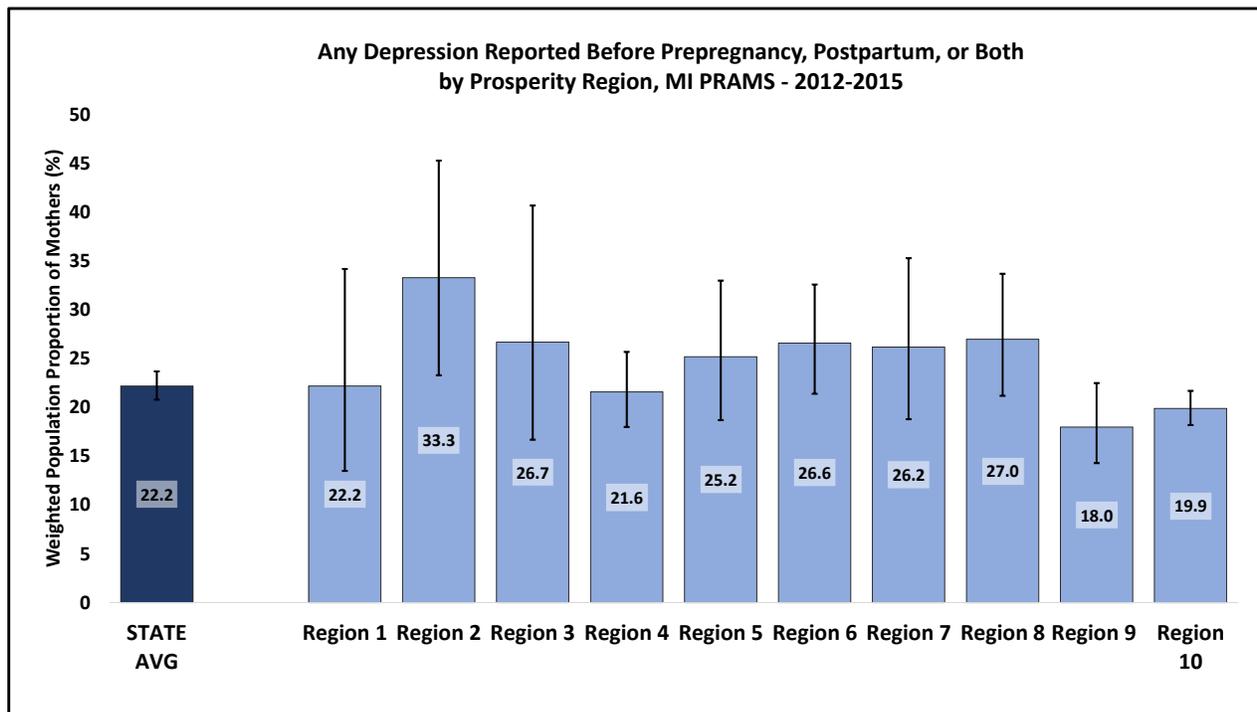
Between one quarter and one fifth of all Michigan mothers are affected by depression (22.2%).

By maternal race/ethnicity:

About one fifth of NHW mothers (20.8%) are affected by depression around the time of pregnancy.

About one quarter of NHB (25.6%) or other race/ethnicity (25.6%) mothers are affected by depression.

The most important thing to take from this slide is that a considerable proportion of mothers of all race/ethnicities are affected by depression either before pregnancy, after pregnancy, or at both times.



Looking at women reporting depression either before pregnancy and/or after pregnancy:

Between one quarter and one fifth of all Michigan mothers are affected by depression (22.2%).

Depression may be relatively more common among mothers of prosperity region 2, but the difference may be attributable to chance ($p=0.0504$). Depression was relatively less common among mothers of prosperity region 9 ($p=0.0383$) and prosperity region 10 ($p=0.0051$). The difference for prosperity region 10 is being driven by less overall depression among mothers of Oakland County (data not shown).

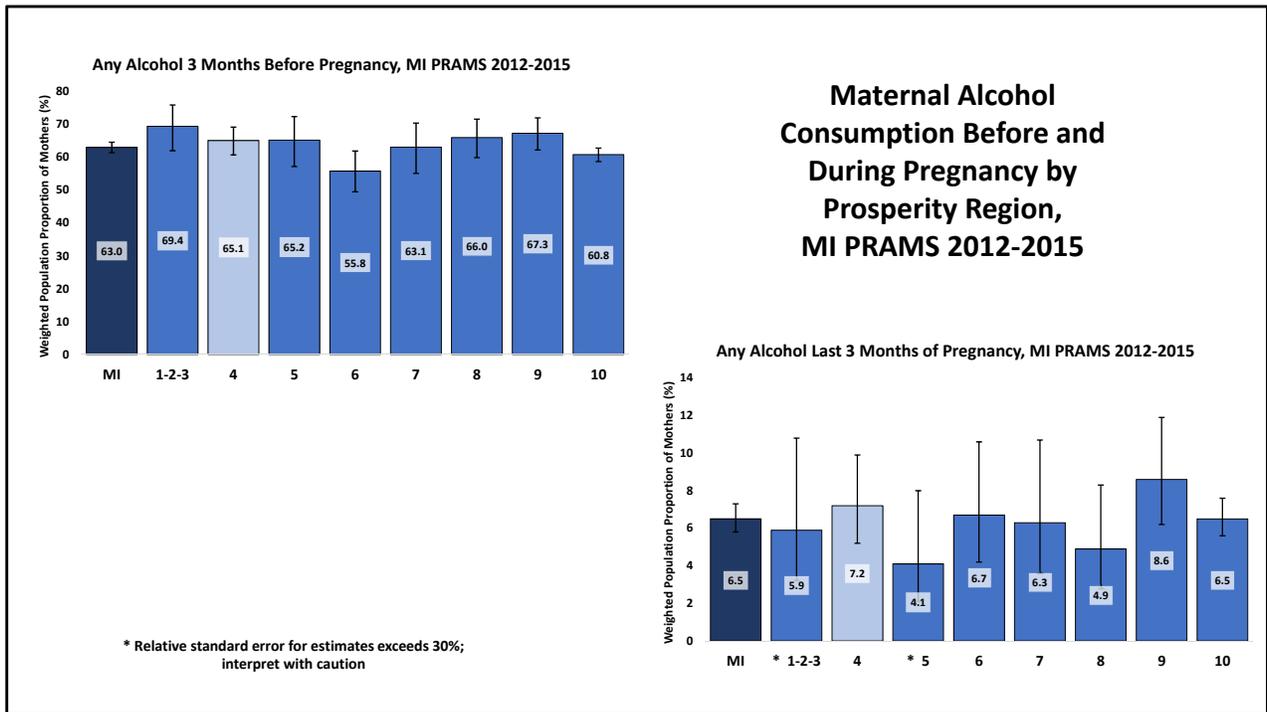
The most important thing to take from this slide is that a considerable proportion of mothers in all prosperity regions are affected by depression either before pregnancy, after pregnancy, or at both times.

Maternal Alcohol Consumption, Prosperity Region 4, 2012-2015

8/23/2019

48

The next slide contains maternal alcohol consumption statistics for prosperity region 4 in the State of Michigan.



Alcohol use data calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting any alcohol consumption at a given time around pregnancy. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

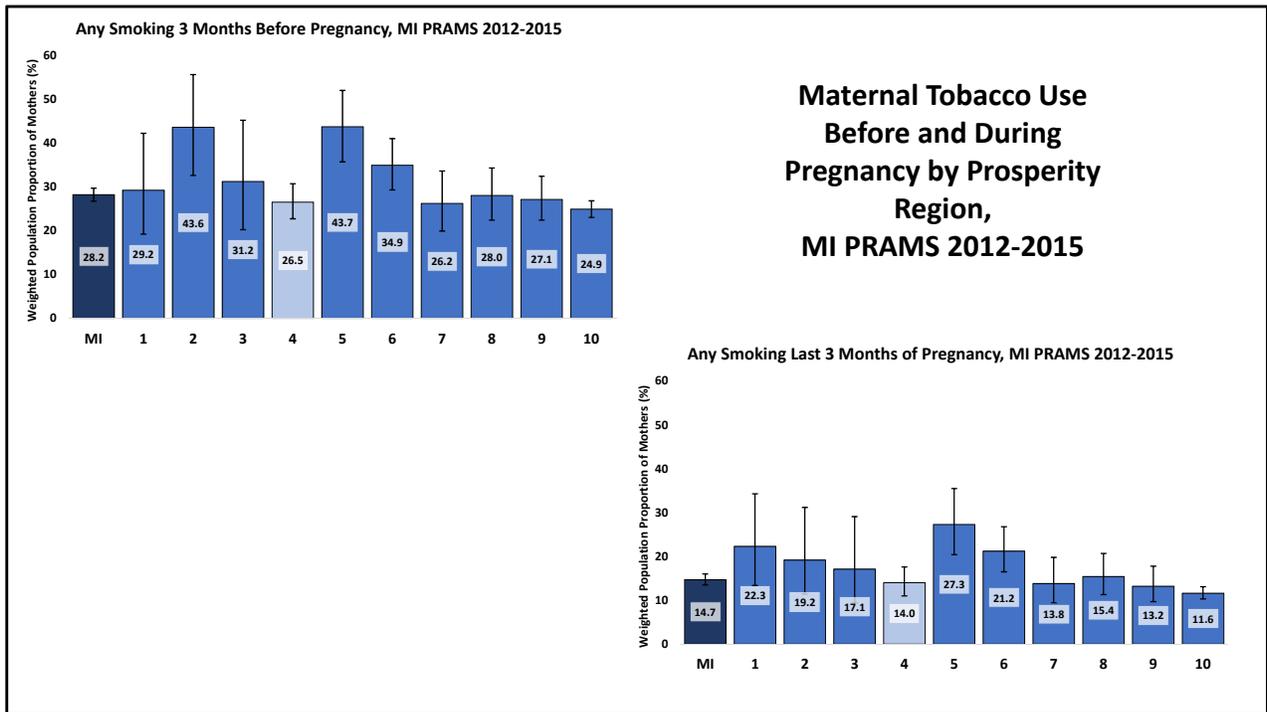
Compared to mothers in the rest of the state, alcohol consumption before pregnancy and during pregnancy did not differ significantly for the mothers of prosperity region 4. However, it is notable that 6.5% of all MI mothers and 7.2% of prosperity region 4 mothers reported any alcohol consumption during the last 3 months of pregnancy.

Maternal Tobacco Use, Prosperity Region 4, 2012-2015

8/23/2019

50

The next slide contains maternal tobacco use statistics for prosperity region 4 in the State of Michigan.



Smoking data calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting any cigarette smoking or whether smoking was allowed in their home during pregnancy. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

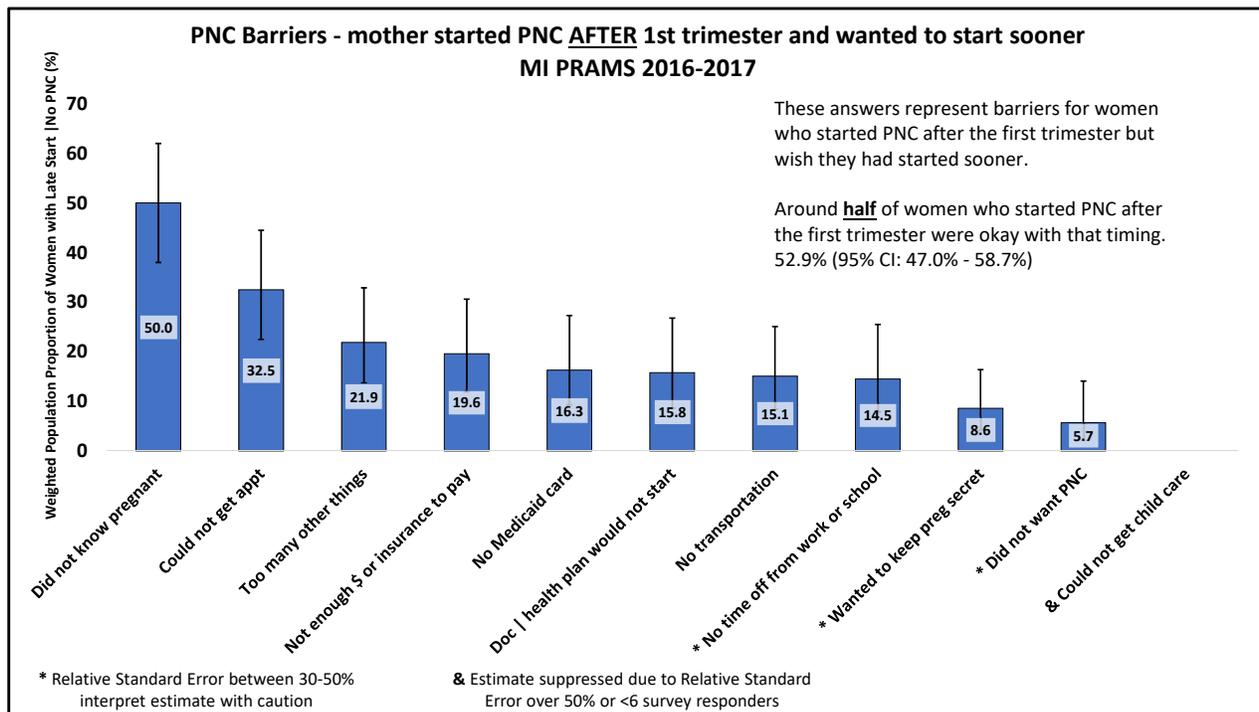
Smoking around pregnancy is a concern everywhere in the state, but there is no difference in the proportion of prosperity region 4 mothers compared to mothers in the remainder of the state. Smoking in the three months before pregnancy was significantly more prevalent among the mothers of prosperity regions 2, 5, and 6 (all $p < 0.05$) and was significantly less prevalent among the mothers of region 10 ($p < 0.05$). Smoking in the last three months of pregnancy was significantly more prevalent among the mothers of prosperity regions 2, 5, and 6 (all $p < 0.05$) and was significantly less prevalent among the mothers of prosperity region 10 ($p < 0.05$).

Barriers to Prenatal Care, Michigan, 2016-2017

8/23/2019

52

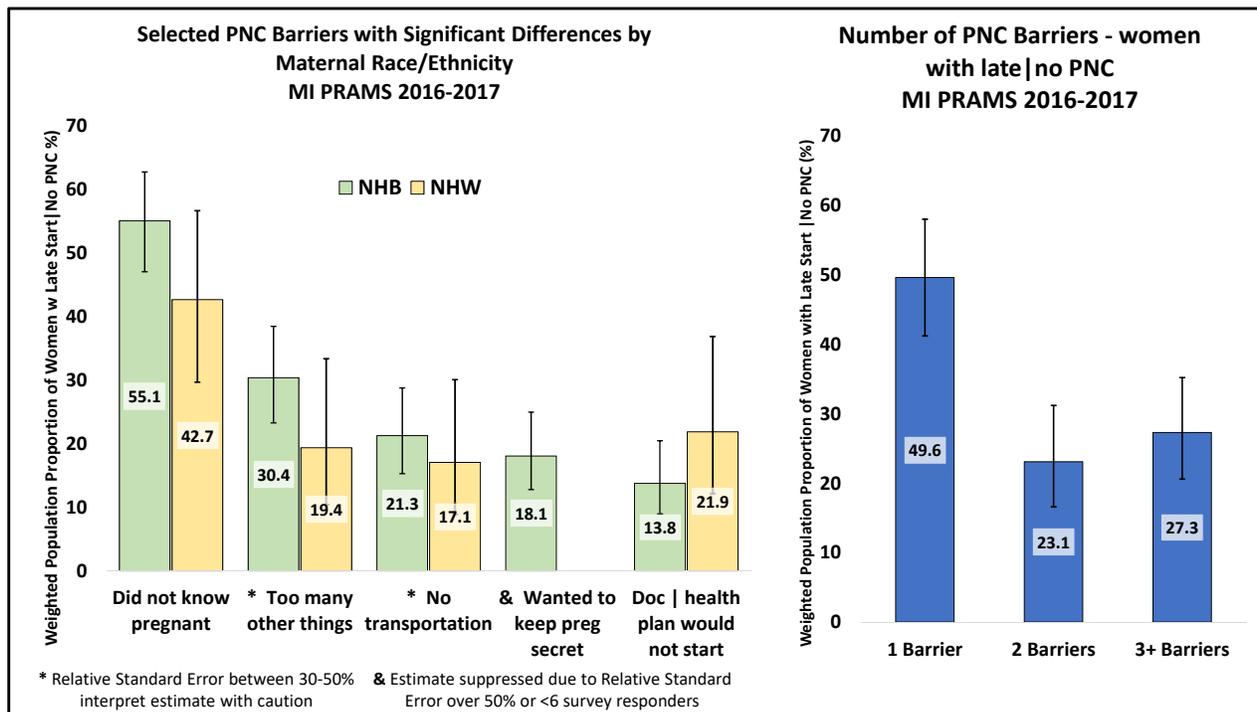
The next couple slides contain barriers to prenatal care statistics for the State of Michigan.



Barriers to PNC are from the 2016 and 2017 MI PRAMS survey. Responses are weighted to represent mothers of live births for those years.

About half (52.9%) of women who start prenatal care after the first trimester tell MI PRAMS that they were okay with the timing of when they started prenatal care. This may be one of the biggest obstacle to encouraging more women to start prenatal care early during pregnancy.

Among women who started PNC after the first trimester and wished that they had started sooner, we see that mom not knowing she was pregnant was the most common barrier to early PNC, followed by others on this graph.



Barriers to PNC are from the 2016 and 2017 MI PRAMS survey. Responses are weighted to represent mothers of live births for those years.

The graph on the left shows a few specific barriers to early PNC that were significantly more prevalent among NHB mothers than NHW mothers. Mother not knowing she was pregnant, having too many things going on, lack of transportation, and wanting to keep her pregnancy secret were more common for NHB mothers.

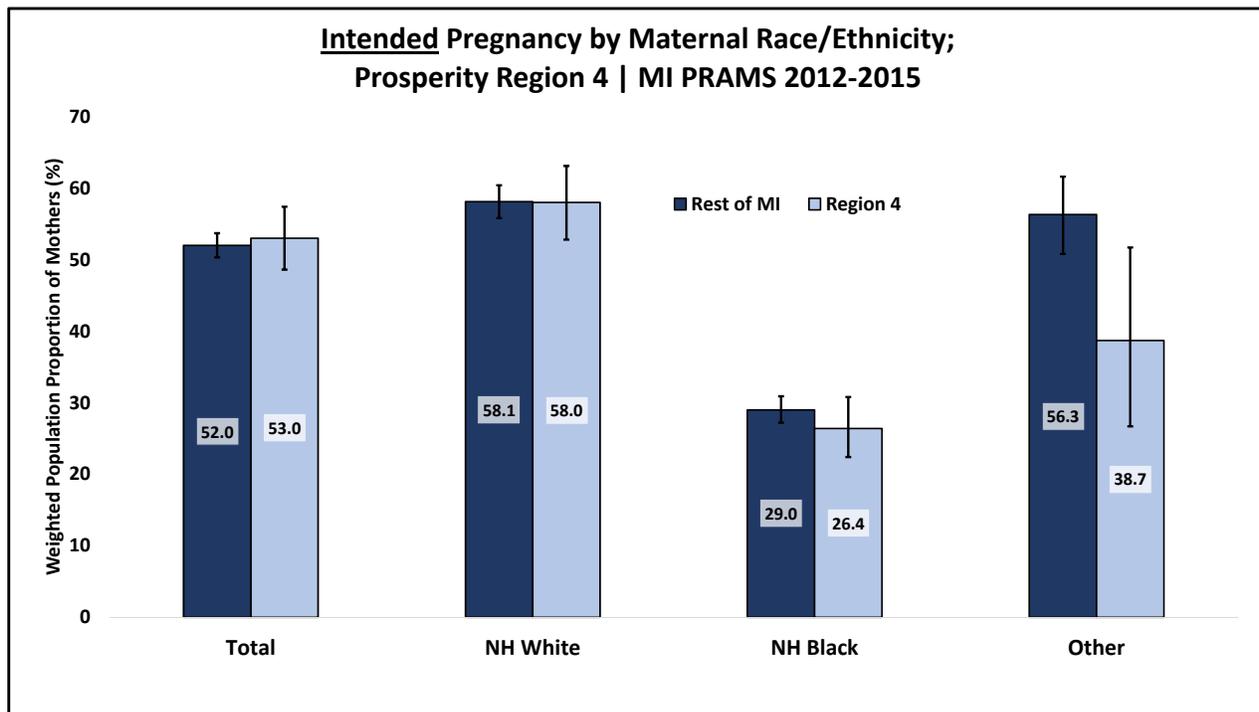
The graph on the right shows the total number of barriers cited by women who wished they had started PNC sooner. Most women (49.6%) have just one barrier that needed to be addressed to help them start PNC sooner. About a quarter have two barriers (23.1%) that would have helped them start PNC sooner.

Pregnancy Intention, Prosperity Region 4, 2012-2015

8/23/2019

55

The next slide contains pregnancy intention statistics for prosperity region 4 in the State of Michigan.



Pregnancy intention is calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting that they wanted to get pregnant at the time they conceived, or they had been wanting to get pregnant for some time before they conceived. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

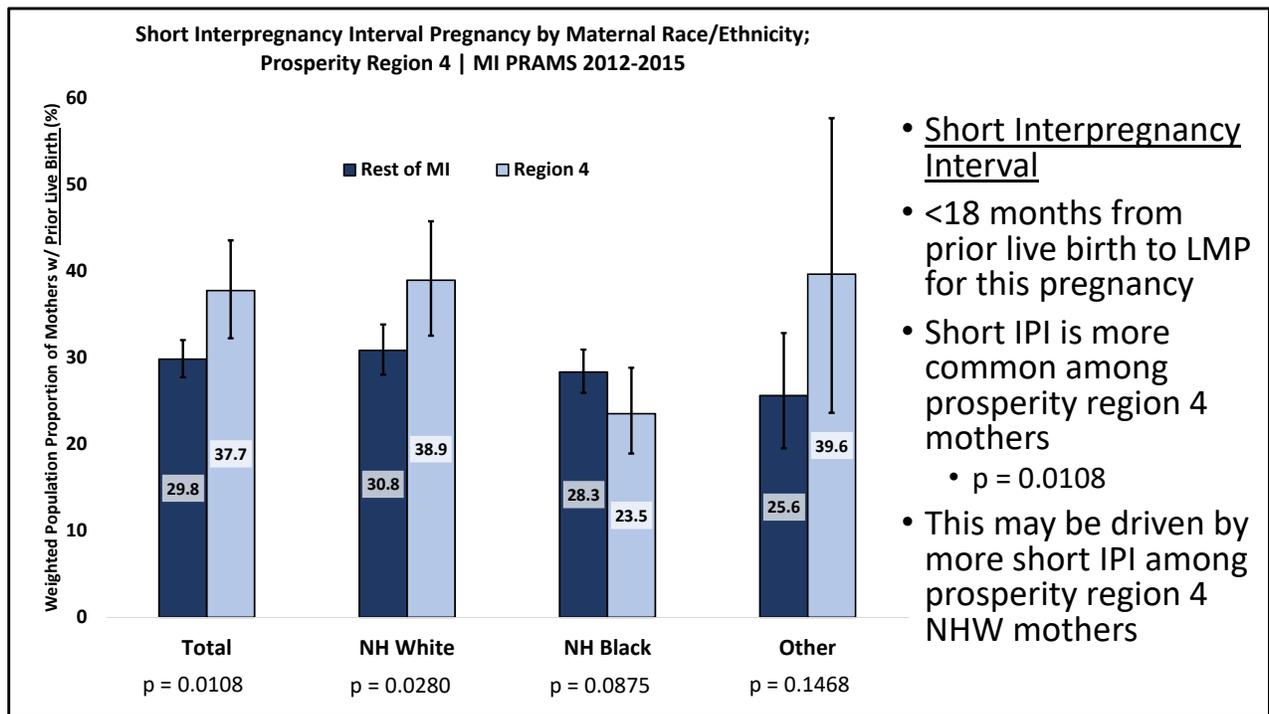
At the regional level, there is no significant difference between prosperity region 4 and the rest of the state in the proportion of intended pregnancies. Within prosperity region 4 as in the rest of the state, intended pregnancy was more common for NHW mothers than NHB mothers. Intended pregnancy is less common among "other" race/ethnicity mothers of prosperity region 4 compared to "other" mothers in the rest of the state ($p=0.0121$).

Short Interpregnancy Interval, Prosperity Region 4, 2012-2015

8/23/2019

57

The next slide contains short interpregnancy interval statistics for prosperity region 4 in the State of Michigan.



Interpregnancy interval (IPI) is estimated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Because PRAMS does not have the end date of mother's last pregnancy (whether it ended in a stillbirth, miscarriage, or termination), IPI here is calculated by counting the number of months between mother's last live birth and her date of last menstrual period before this pregnancy. Thus technically the PRAMS estimate of IPI is an inter-live-birth interval. Short IPI is defined as less than 18 months elapsed since mother's last live birth. The denominator is the proportion of Michigan mothers who have had a prior live birth. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

Compared to the rest of the state (29.8%) there are more women in prosperity region 4 (37.7%) who began this pregnancy less than 18 months after their last live birth (p=0.0108). For Michigan as a whole, short IPI is slightly more prevalent among NHW mothers (30.8%) than NHB mothers (28.3%) (p=0.0122). The same is true within prosperity region 4, but the size of the difference is greater (38.9% vs 23.5%) (p=0.0002). This is due to a relatively higher prevalence of short IPI among prosperity region 4 NHW moms compared to NHW moms in the rest of the state (p = 0.0280) in combination with a somewhat lower prevalence of short IPI among prosperity region 4 NHB moms compared to NHB moms in the rest of the state (p=0.0875; non-significant). Short IPI skews towards NHW moms in the state as a whole, and even more so in prosperity region 4. The difference seen in the final two columns is large, but due to small numbers this difference may be attributable to chance (p=0.1468).

Perinatal Periods of Risk (PPOR) Prosperity Region 4, 2013-2017

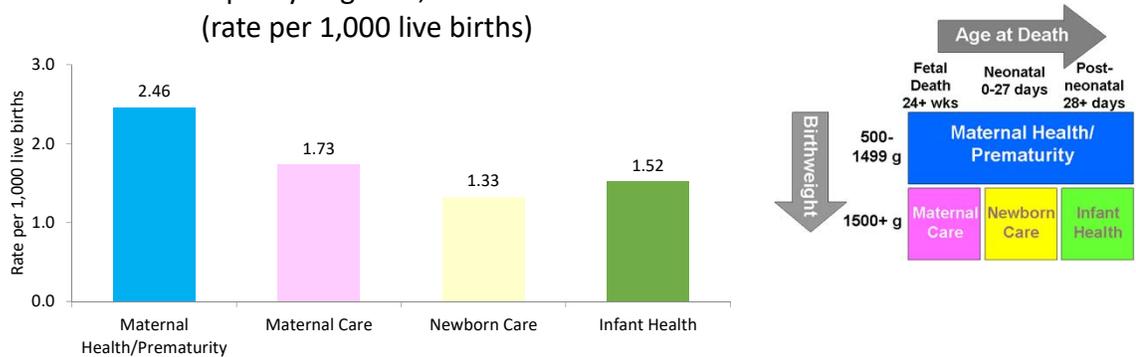
8/23/2019

59

The next several slides contain updated perinatal periods of risk (PPOR) statistics for prosperity region 4 in the State of Michigan.

Perinatal Periods of Risk (PPOR)*, Prosperity Region 4

Feto-Infant Mortality Rate,
Prosperity Region 4, 2013-2017
(rate per 1,000 live births)



* CityMatCH, available at <https://www.citymatch.org/perinatal-periods-of-risk-approach/>

Data source: Michigan resident live birth files, infant mortality files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

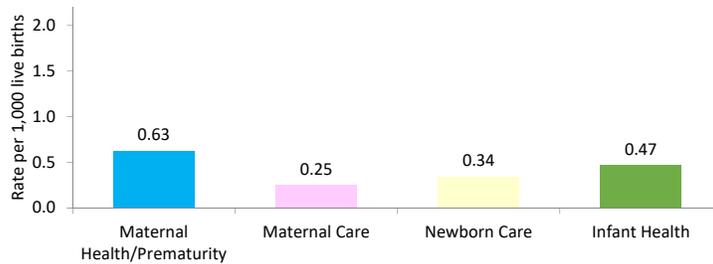
60

This slide shows the feto-infant mortality rate within prosperity region 4 in Michigan from 2013-2017 for each of the four periods based on both birth weight and age at death: maternal health/prematurity, maternal care, newborn care, and infant health.

From 2013 to 2017 within prosperity region 4, the feto-infant mortality rate was 2.46 per 1,000 live births in the maternal health and prematurity period, 1.73 per 1,000 live births in the maternal care period, 1.33 per 1,000 live births in the newborn care period, and 1.52 per 1,000 live births in the infant health period.

Perinatal Periods of Risk (PPOR)*, Prosperity Region 4

Feto-Infant Excess Mortality Rate*,
Prosperity Region 4, 2013-2017
(rate per 1,000 live births)



PPOR helps communities move from data to action



* CityMatCH, available at <https://www.citymatch.org/perinatal-periods-of-risk-approach/>

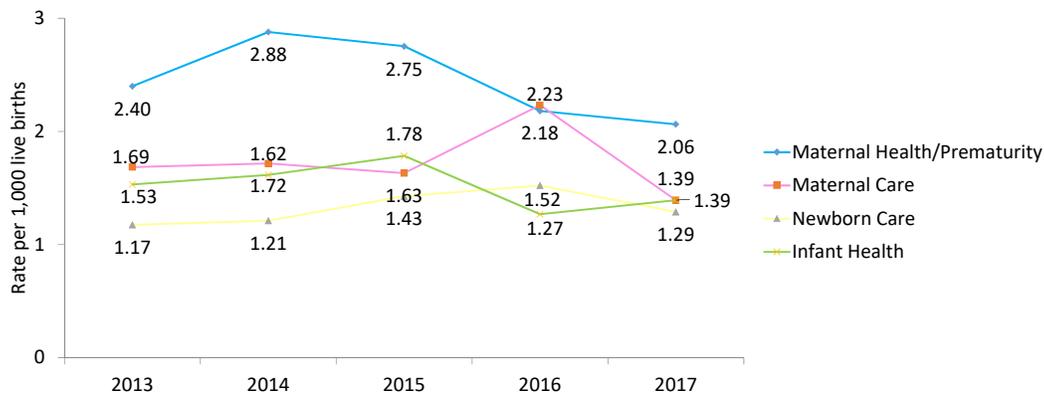
Using Michigan reference: White non-Hispanic, 20-40 years old and (>13 years education or intending to use private insurance at delivery).

Data source: Michigan resident live birth files, infant mortality files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

This slide shows the feto-infant excess mortality rate within prosperity region 4 in Michigan from 2013-2017 for each of the four periods based on both birth weight and age at death: maternal health/prematurity, maternal care, newborn care, and infant health. The excess mortality rate is calculated by subtracting the mortality rate of the reference group from the mortality rate of the population group. The reference group is White non-Hispanic Michigan women, over 20 years and less than 40 years old, and at least 13 years education or intending to use private insurance at delivery.

From 2013 to 2017 within prosperity region 4, the excess feto-infant mortality rate was 0.63 per 1,000 live births in the maternal health and prematurity period, 0.25 per 1,000 live births in the maternal care period, 0.34 per 1,000 live births in the newborn care period, and 0.47 per 1,000 live births in the infant health period.

Feto-Infant Mortality Rate Trend, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)



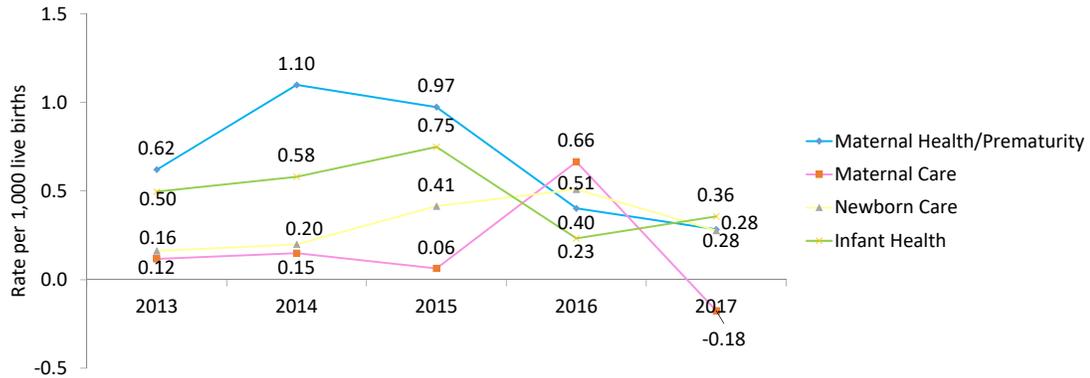
Data source: Michigan resident live birth files, infant mortality files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

62

This slide shows the feto-infant mortality rate trend by PPOR period within prosperity region 4 in Michigan from 2013 to 2017.

From 2013 to 2017, in prosperity region 4, the feto-infant mortality rate in the maternal health and prematurity period increased from 2013 to 2014, and declined from 2014 to 2017. The rate in the newborn care period has been on a slow increase from 2013 to 2016, and then decreased in 2017. The rate in the infant health period has been on a slow increase from 2013 to 2015, declined in 2016, and then increased in 2017. The rate in the maternal care period decreased from 2013 to 2015, then went up in 2016, and then decreased in 2017.

Feto-Infant Excess Mortality Rate Trend, Prosperity Region 4, 2013-2017 (rate per 1,000 live births)



- Using Michigan reference: White non-Hispanic, 20-40 years old and (>13 years education or intending to use private insurance at delivery).
- Excess mortality rates less than 0 mean mortality rates are lower in the population compared to the reference group.

Data source: Michigan resident live birth files, infant mortality files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

63

This slide shows the feto-infant excess mortality rate trend by PPOR period within prosperity region 4 in Michigan from 2013 to 2017. The excess mortality rate is calculated by subtracting the mortality rate of the reference group from the mortality rate of the population group. The reference group is White non-Hispanic Michigan women, over 20 years and less than 40 years old, and at least 13 years education or intending to use private insurance at delivery.

From 2013 to 2017, in prosperity region 4, the feto-infant mortality excess rate in the maternal health and prematurity period increased from 2013 to 2014, and declined from 2014 to 2017. The rate in the newborn care period has been on a slow increase from 2013 to 2016, and then decreased in 2017. The rate in the infant health period has been on a slow increase from 2013 to 2015, declined in 2016, and then increased in 2017. The rate in the maternal care period decreased from 2013 to 2015, then went up in 2016, and then decreased in 2017.